

3469674 FAIRCHILD SEMICONDUCTOR

84D 27478 D

FAIRCHILD

A Schlumberger Company

1N658/FDLL658

General Purpose Diodes

T-01-09

- BV... 120 V (MIN) @ 100 μ A
- V_F... 1.0 V (MAX) @ 100 mA

ABSOLUTE MAXIMUM RATINGS (Note 1)**Temperatures**

| | |
|--|-----------------|
| Storage Temperature Range | -65°C to +200°C |
| Maximum Operating Junction Temperature | +175°C |
| Lead Temperature | +200°C |

Power Dissipation (Note 2)

| | |
|---|------------|
| Maximum Total Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

Maximum Voltage and Currents

| | | |
|------------------------|------------------------------|--------|
| WIV | Working Inverse Voltage | 100 V |
| I _O | Average Rectified Current | 200 mA |
| I _F | Forward Current Steady State | 500 mA |
| i _F (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0s | 1.0 A |
| | Pulse Width = 1.0 μ s | 4.0 A |

PACKAGES

| | |
|---------|-------|
| 1N658 | DO-35 |
| FDLL658 | LL-34 |

If you need this device in the SOT package, an electrical equivalent is available. See FDSO1400 family.

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|-----------------|-----------------------|-----|----------|---------------|---|
| V _F | Forward Voltage | | 1.0 | V | I _F = 100 mA |
| I _R | Reverse Current | | 50 25 | nA μ A | V _R = 50 V V _R = 50 V, T _A = 150°C |
| BV | Breakdown Voltage | 120 | | V | I _R = 100 μ A |
| t _{rr} | Reverse Recovery Time | | 300 | ns | V _R = 40 V, I _F = 5.0 mA, R _L = 2.0 k Ω , C _L = 10 pF, Recovery to 80 k Ω |

NOTES:

- The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- For product family characteristic curves, refer to Chapter 4, D1.



1N659/660/661
FDLL659/660/661
 General Purpose Diodes

T-01-09

- $V_F \dots 1.0 \text{ V (MAX) @ } 6.0 \text{ mA}$
- $t_{rr} \dots 300 \text{ ns (MAX)}$

ABSOLUTE MAXIMUM RATINGS (Note 1)

| | | |
|--|--|-----------------|
| Temperatures | | |
| Storage Temperature Range | | -65°C to +200°C |
| Maximum Operating Junction Temperature | | +175°C |
| Lead Temperature | | +260°C |

| | | |
|---|--|------------|
| Power Dissipation (Notes 2) | | |
| Maximum Total Dissipation at 25°C Ambient | | 500 mW |
| Linear Derating Factor (from 25°C) | | 3.33 mW/°C |

| | | | | |
|-------------------------------------|------------------------------|--------------|--------------|--------------|
| Maximum Voltage and Currents | | 1N659 | 1N660 | 1N661 |
| WIV | Working Inverse Voltage | 50 V | 100 V | 200 V |
| I_O | Average Rectified Current | 200 mA | 200 mA | 200 mA |
| I_F | Forward Current Steady State | 500 mA | 500 mA | 500 mA |
| $I_{f(\text{surge})}$ | Peak Forward Surge Current | | | |
| | Pulse Width = 1.0s | 1.0 A | 1.0 A | 1.0 A |
| | Pulse Width = 1.0 μ s | 4.0 A | 4.0 A | 4.0 A |

PACKAGES

| | |
|---------|-------|
| 1N659 | DO-35 |
| 1N660 | DO-35 |
| 1N661 | DO-35 |
| FDLL659 | LL-34 |
| FDLL660 | LL-34 |
| FDLL661 | LL-34 |

If you need this device in the SOT package, an electrical equivalent is available. See FDSO1200 family.



ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | 1N659 | | 1N660 | | 1N661 | | UNITS | TEST CONDITIONS |
|----------|-----------------------|-------|-----|-------|-----|-------|-----|---------|--|
| | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| V_F | Forward Voltage | | 1.0 | | 1.0 | | 1.0 | V | $I_F = 6.0 \text{ mA}$ |
| I_R | Reverse Current | | 5.0 | | 5.0 | | 10 | μ A | $V_R = 50 \text{ V}$ $V_R = 100 \text{ V}$ $V_R = 200 \text{ V}$ $V_R = 50 \text{ V, } T_A = 100^\circ\text{C}$ $V_R = 100 \text{ V, } T_A = 100^\circ\text{C}$ $V_R = 200 \text{ V, } T_A = 100^\circ\text{C}$ |
| BV | Breakdown Voltage | 60 | | 120 | | 240 | | V | $I_R = 100 \mu\text{A}$ |
| t_{rr} | Reverse Recovery Time | | 300 | | 300 | | 300 | ns | $V_r = 35 \text{ V, } I_t = 30 \text{ mA, } R_L = 2.0 \text{ k}\Omega$ $C_L = 10 \text{ pF, Recovery to } 400 \text{ k}\Omega$ |

- NOTES:
 1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
 2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
 3. For product family characteristic curves, refer to Chapter 4, D4 for 1N659, 4, D1 for 1N660 and 1N661.



1N746 through 1N759 T-11-11
500 mW Silicon Linear Diodes

ABSOLUTE MAXIMUM RATINGS (Note 1)

PACKAGES

All Devices DO-35

Temperatures

| | |
|--|-----------------|
| Storage Temperature Range | -65°C to +200°C |
| Maximum Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

Power Dissipation (Note 2)

| | |
|---|------------|
| Maximum Total Power Dissipation at 25°C Ambient | 500 mW |
| Linear Power Derating Factor (from 25°C) | 3.33 mW/°C |

ELECTRICAL CHARACTERISTICS (25°C Ambient unless otherwise noted)

| SYMBOL | Z _Z | V _Z | I _R | | TC |
|----------------|--|--|---|--------|---|
| | | | Maximum Reverse Current (V _R = 1.0V) | | |
| | | | @25°C | @150°C | |
| Characteristic | Maximum Zener Impedance (Note 4) (I _Z = 20 mA) | Nominal Zener Voltage (Note 3) (I _Z = 20 mA) | | | Typical Temperature Coefficient of V _Z |
| UNIT | Ω | V | μA | μA | %/°C |
| 1N746 | 28.0 | 3.3 | 10.0 | 30.0 | -0.070 |
| 1N747 | 24.0 | 3.6 | 10.0 | 30.0 | -0.065 |
| 1N748 | 23.0 | 3.9 | 10.0 | 30.0 | -0.060 |
| 1N749 | 22.0 | 4.3 | 2.0 | 30.0 | -0.055 |
| 1N750 | 19.0 | 4.7 | 2.0 | 30.0 | -0.043 |
| 1N751 | 17.0 | 5.1 | 1.0 | 20.0 | ±0.030 |
| 1N752 | 11.0 | 5.6 | 1.0 | 20.0 | ±0.028 |
| 1N753 | 7.0 | 6.2 | 0.1 | 20.0 | +0.045 |
| 1N754 | 5.0 | 6.8 | 0.1 | 20.0 | +0.050 |
| 1N755 | 6.0 | 7.5 | 0.1 | 20.0 | +0.058 |
| 1N756 | 8.0 | 8.2 | 0.1 | 20.0 | +0.062 |
| 1N757 | 10.0 | 9.1 | 0.1 | 20.0 | +0.068 |
| 1N758 | 17.0 | 10.0 | 0.1 | 20.0 | +0.075 |
| 1N759 | 30.0 | 12.0 | 0.1 | 20.0 | +0.077 |

NOTES:

- These ratings are limiting values above which the serviceability of the diode may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- Type numbers without suffix have ±10% tolerance on nominal V_Z. Type numbers with suffix A have ±5% tolerance on nominal V_Z.
- The Zener impedance Z_Z is derived by superimposing a 60 Hz 2 mA (RMS) signal on the 20 mA I_Z test current.
- For product family characteristic curves, refer to Chapter 4, D13

FAIRCHILD

A Schlumberger Company

1N/FDLL914/A/B/916/A/B
1N/FDLL4148/4149/4446
1N/FDLL4447/4448/4449
 High Conductance Ultra Fast
 Switching Diodes T-03-D9

- t_{rr} ... 4.0 ns (MAX)
- BV... 100 V (MIN)

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

Storage Temperature Range
 Max Junction Operating Temperature
 Lead Temperature

-65° to +200°C
 +175°C
 +260°C

Power Dissipation (Note 2)

Maximum Total Dissipation at 25°C
 Linear Derating Factor (from 25°C)

500 mW
 3.33 mW/°C

Maximum Voltage and Currents

WIV Working Inverse Voltage
 I_O Average Rectified Current
 I_f DC Forward Current
 I_f Recurrent Peak Forward Current
 $I_f(\text{surge})$ Peak Forward Surge Current
 Pulse Width = 1.0 s
 Pulse Width = 1.0 μ s

75 V
 200 mA
 300 mA
 400 mA
 1.0 A
 4.0 A

PACKAGES

| | |
|----------|-------|
| 1N914 | DO-35 |
| 1N916 | DO-35 |
| 1N914A | DO-35 |
| 1N914B | DO-35 |
| 1N916A | DO-35 |
| 1N916B | DO-35 |
| 1N4148 | DO-35 |
| 1N4149 | DO-35 |
| 1N4446 | DO-35 |
| 1N4447 | DO-35 |
| 1N4448 | DO-35 |
| 1N4449 | DO-35 |
| FDLL914 | LL-34 |
| FDLL916 | LL-34 |
| FDLL914A | LL-34 |
| FDLL914B | LL-34 |
| FDLL916A | LL-34 |
| FDLL916B | LL-34 |
| FDLL4148 | LL-34 |
| FDLL4149 | LL-34 |
| FDLL4446 | LL-34 |
| FDLL4447 | LL-34 |
| FDLL4448 | LL-34 |
| FDLL4449 | LL-34 |

If you need this device in the SOT package, an electrical equivalent is available. See FDSO1200 family.

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|----------|-----------------------|-----------|--|----------------------------|---|
| BV | Breakdown Voltage | 100 75 | | V V | $I_R = 100 \mu A$ $I_R = 5.0 \mu A$ |
| I_R | Reverse Current | | 25 50 5.0 | nA μA μA | $V_R = 20 V$ $V_R = 20 V, T_A = 150^\circ C$ $V_R = 75 V$ |
| V_F | Forward Voltage | | 0.62 0.63 1.0 1.0 1.0 1.0 | V V V V V V | $I_F = 5.0 mA$ $I_F = 5.0 mA$ $I_F = 10 mA$ $I_F = 20 mA$ $I_F = 30 mA$ $I_F = 100 mA$ |
| t_{rr} | Reverse Recovery Time | | 4.0 | ns | $I_f = 10 mA, V_r = 6.0 V,$ $R_L = 100 \Omega \text{ Rec. to } 1.0 mA$ |

NOTES:

1. Maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. For family characteristic curves, refer to Chapter 4, D4.

1N/FDLL914/A/B/916/A/B
 1N/FDLL4148/4149/4446
 1N/FDLL4447/44448/4449

T.03-09

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|-----------------|-------------------------------|-----|-----|-------|--|
| C | Capacitance | | 4.0 | pF | $V_R = 0, f = 1 \text{ MHz}$ |
| | | | 2.0 | pF | $V_R = 0, f = 1 \text{ MHz}$ |
| V _{fr} | Peak Forward Recovery Voltage | | 2.5 | V | 50 mA Peak Square Wave, 0.1 μ s pulse width, 5 kHz - 100 kHz rep. rate |
| RE | Rectification Efficiency | 45 | | % | 2.0 V rms, f = 100 MHz |



A Schlumberger Company

1N957 through 1N973
 500 mW Silicon Planar
 Zener Diodes

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

| | |
|--|-----------------|
| Storage Temperature Range | -65°C to +200°C |
| Maximum Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

Power Dissipation (Note 2)

| | |
|---|------------|
| Maximum Total Power Dissipation at 25°C Ambient | 500 mW |
| Linear Power Derating Factor (from 25°C) | 3.33 mW/°C |

PACKAGES

All Devices DO-35

ELECTRICAL CHARACTERISTICS (25°C Ambient)

| SYMBOL | V _Z | Z _Z | I _{ZT} | Z _{ZK} | I _{ZK} | I _R | V _{RT} | | | TC | I _{ZM} |
|--------|--|--|-----------------|---|-----------------|--|-------------------------------|-------------------------------|------------------------------|---|--------------------------------|
| | Nominal Zener Voltage (Note 3) @I _{ZT} | Maximum Zener Impedance (Note 4) @I _{ZT} | Test Current | Maximum Zener Knee Impedance (Note 4) @I _{ZK} | Test Current | Maximum Reverse Current @V _{RT} | Test Voltage | | | Typical Temperature Coefficient of V _Z | Maximum Zener Current (Note 5) |
| | | | | | | | ±20% V _Z Tolerance | ±10% V _Z Tolerance | ±5% V _Z Tolerance | | |
| UNIT | V | Ω | mA | Ω | mA | μA | V | V | V | %/°C | mA |
| 1N957 | 6.8 | 4.5 | 18.5 | 700 | 1.0 | 150 | 4.4 | 4.9 | 5.2 | +0.050 | 47 |
| 1N958 | 7.5 | 5.5 | 16.5 | 700 | 0.5 | 75 | 4.8 | 5.4 | 5.7 | +0.058 | 42 |
| 1N959 | 8.2 | 6.5 | 15.0 | 700 | 0.5 | 50 | 5.2 | 5.9 | 6.2 | +0.062 | 38 |
| 1N960 | 9.1 | 7.5 | 14.0 | 700 | 0.5 | 25 | 5.8 | 6.6 | 6.9 | +0.068 | 35 |
| 1N961 | 10.0 | 8.5 | 12.5 | 700 | 0.25 | 10 | 6.4 | 7.2 | 7.6 | +0.072 | 32 |
| 1N962 | 11.0 | 9.5 | 11.5 | 700 | 0.25 | 5.0 | 7.0 | 8.0 | 8.4 | +0.073 | 28 |
| 1N963 | 12.0 | 11.5 | 10.5 | 700 | 0.25 | 5.0 | 7.6 | 8.6 | 9.1 | +0.076 | 26 |
| 1N964 | 13.0 | 13.0 | 9.5 | 700 | 0.25 | 5.0 | 8.3 | 9.4 | 9.9 | +0.079 | 24 |
| 1N965 | 15.0 | 16.0 | 8.5 | 700 | 0.25 | 5.0 | 9.6 | 10.8 | 11.4 | +0.082 | 21 |
| 1N966 | 16.0 | 17.0 | 7.8 | 700 | 0.25 | 5.0 | 10.2 | 11.5 | 12.2 | +0.083 | 19 |
| 1N967 | 18.0 | 21.0 | 7.0 | 750 | 0.25 | 5.0 | 11.5 | 13.0 | 13.7 | +0.085 | 17 |
| 1N968 | 20.0 | 25.0 | 6.2 | 750 | 0.25 | 5.0 | 12.8 | 14.4 | 15.2 | +0.086 | 15 |
| 1N969 | 22.0 | 29.0 | 5.6 | 750 | 0.25 | 5.0 | 14.0 | 15.8 | 16.7 | +0.087 | 14 |
| 1N970 | 24.0 | 33.0 | 5.2 | 750 | 0.25 | 5.0 | 15.4 | 17.3 | 18.2 | +0.088 | 13 |
| 1N971 | 27.0 | 41.0 | 4.6 | 750 | 0.25 | 5.0 | 17.2 | 19.4 | 20.6 | +0.090 | 11 |
| 1N972 | 30.0 | 49.0 | 4.2 | 1000 | 0.25 | 5.0 | 19.2 | 21.6 | 22.8 | +0.091 | 10 |
| 1N973 | 33.0 | 58.0 | 3.8 | 1000 | 0.25 | 5.0 | 21.1 | 23.8 | 25.1 | ±0.092 | 9.2 |

NOTES

- These ratings are limiting values above which the serviceability of the diode may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- Type numbers without suffix have ±20% tolerance on nominal V_Z.
 Type numbers with suffix A have ±10% tolerance on nominal V_Z.
 Type numbers with suffix B have ±5% tolerance on nominal V_Z.
- The Zener impedances Z_Z and Z_{ZK} are derived by superimposing a 60 Hz signal on test currents I_{ZT} and I_{ZK}, having an RMS value of 10% of the d.c. value of I_{ZT} and I_{ZK} respectively.
- Maximum Zener Current (I_{ZM}) is based on the maximum Zener voltage of a 20% tolerance unit.
- For product family characteristic curves, refer to Chapter 4, D13.

3469674 FAIRCHILD SEMICONDUCTOR

84D 27484 D1



1N3064/4305/4454 T-03-09
FDLL3064/4305/4454

Ultra Fast Low Capacitance Diodes

- C...2.0 pF @ $V_R = 0, f = 1.0 \text{ MHz}$
- t_{rr} ...4.0 ns @ $I_f = 10 \text{ mA}, I_r = 10 \text{ mA}, V_r = 1.0 \text{ V}$
- BV...75 V (MIN)

PACKAGES

| | |
|----------|-------|
| 1N3064 | DO-35 |
| 1N4305 | DO-35 |
| 1N4454 | DO-35 |
| FDLL3064 | LL-34 |
| FDLL4305 | LL-34 |
| FDLL4454 | LL-34 |

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

| | |
|------------------------------------|-----------------|
| Storage Temperature Range | -65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

Power Dissipation (Note 2)

| | |
|------------------------------------|------------|
| Maximum Total Dissipation at 25°C | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

If you need this device in the SOT package, an electrical equivalent is available. See FDSO1200 family.

Maximum Voltages and Currents

| | | |
|---------------|--------------------------------|--------|
| WIV | Working Inverse Voltage | 50 V |
| I_O | Average Rectified Current | 100 mA |
| I_F | Forward Current Steady State | 300 mA |
| i_f | Recurrent Peak Forward Current | 400 mA |
| i_f (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μ s | 4.0 A |

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|-------------------------------|--|--------|-------|---------------|---|
| V_F | Forward Voltage | 0.610 | 0.710 | V | $I_F = 2.0 \text{ mA}$ $I_F = 1.0 \text{ mA}$ $I_F = 250 \mu\text{A}$ $I_F = 10 \text{ mA}$ $I_F = 10 \text{ mA}$ |
| | | 0.550 | 0.650 | V | |
| | | 0.505 | 0.575 | V | |
| | | | 1.0 | V | |
| | | | 0.70 | 0.85 | |
| | | | | | |
| I_R | Reverse Current | | 0.1 | μA | $V_R = 50 \text{ V}$ $V_R = 50 \text{ V}, T_A = 150^\circ\text{C}$ |
| | | | 100 | μA | |
| BV | Breakdown Voltage | 75 | | V | $I_R = 5.0 \mu\text{A}$ |
| t_{rr} | Reverse Recovery Time (Note 3) | 1N4305 | 2.0 | ns | $I_f = 10 \text{ mA}, V_r = 6.0 \text{ V}, R_L = 100 \Omega$ $I_f = I_r = 10 \text{ mA}, R_L = 100 \Omega,$ $V_r = 1.0 \text{ V}$ |
| | | 1N3064 | | | |
| | | 1N4305 | 4.0 | ns | |
| | | 1N4454 | | | |
| C | Capacitance | | 2.0 | pF | $V_R = 0, f = 1.0 \text{ MHz}$ |
| RE | Rectification Efficiency (Note 4) | 45 | | % | $f = 1.0 \text{ MHz}$ |
| $\Delta V_F / ^\circ\text{C}$ | Forward Voltage Temperature Coefficient (Note 5) | | 3.0 | mV/°C | |

NOTES:

- The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
- Recovery to 1.0 mA.
- Rectification efficiency is defined as the ratio of dc load voltage to peak rf input voltage to the detector circuit, measured with 2.0 V rms input to the circuit. Load resistance 5.0 Ω , load capacitance 20 pF.
- This value for $\Delta V_F / ^\circ\text{C}$ is a typical value not a minimum or maximum.
- For product family characteristic curves, refer to Chapter 4, D4.

FAIRCHILD

A Schlumberger Company

1N3070/4938

FDLL3070/4938

T-03-09

High Speed High
Conductance Diodes

- BV... 200 V (MIN)
- I_R... 100 nA (MAX)

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

| | |
|------------------------------------|-----------------|
| Storage Temperature Range | -65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

Power Dissipation (Note 2)

| | |
|---|------------|
| Maximum Total Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

Maximum Voltage and Currents

| | | |
|------------------------|---------------------------------|--------|
| WIV | Working Inverse Voltage | 175 V |
| I _O | Average Rectified Current | 200 mA |
| I _F | Forward Current Steady State DC | 500 mA |
| I _f | Recurrent Peak Forward Current | 600 mA |
| I _f (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μs | 4.0 A |

PACKAGES

| | |
|----------|-------|
| 1N3070 | DO-35 |
| 1N4938 | DO-35 |
| FDLL3070 | LL-34 |
| FDLL4938 | LL-34 |

If you need this device in the SOT package, an electrical equivalent is available. See FDS01400 family.



ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|-----------------|-----------------------------------|-----|------------|----------|--|
| I _R | Reverse Current | | 100 100 | nA μA | V _R = 175 V V _R = 175 V, T _A = 150°C |
| BV | Breakdown Voltage | 200 | | V | I _R = 100 μA |
| V _F | Forward Voltage | | 1.0 | V | I _F = 100 mA |
| C | Capacitance | | 5.0 | pF | V _R = 0, f = 1.0 MHz |
| t _{rr} | Reverse Recovery Time (Note 3) | | 50 | ns | I _f = I _r = 30 mA, R _L = 100Ω |
| RE | Rectification Efficiency (Note 4) | 35 | | % | f = 100 MHz |

NOTES:

1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. Recovery to 1.0 mA.
4. Rectification efficiency is defined as the ratio of dc load voltage to peak rf input voltage to the detector circuit, measured with 2.0 V rms input to the circuit. Load resistance: 5.0 kΩ, load capacitance 20 pF.
5. 1N3070 and 1N4938 are electrically and mechanically identical.
6. For product family characteristic curves, refer to Chapter 4, D1.

FAIRCHILD

A Schlumberger Company

1N3595/6099 *T201-09*
FDLL3595/6099
 High Conductance Low
 Leakage Diodes

- BV... 150 V (MIN) @ 100 μ A
- V_F... 1.0 V @ 200 mA

PACKAGES

| | |
|----------|-------|
| 1N3595 | DO-35 |
| 1N6099 | DO-35 |
| FDLL3595 | LL-34 |
| FDLL6099 | LL-34 |

ABSOLUTE MAXIMUM RATINGS (Note 1)

Temperatures

| | |
|------------------------------------|-----------------|
| Storage Temperature Range | -65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

Power Dissipation (Note 2)

| | |
|---|------------|
| Maximum Total Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (From 25°C) | 3.33 mW/°C |

Maximum Voltage and Currents

| | | |
|------------------------|---------------------------------|--------|
| WIV | Working Inverse Voltage | 125 V |
| I _O | Average Rectified Current | 200 mA |
| I _F | Forward Current Steady State | 500 mA |
| i _f | Peak Repetitive Forward Current | 600 mA |
| i _f (surge) | Peak Forward Surge Current | |
| | Pulse Width = 1.0 s | 1.0 A |
| | Pulse Width = 1.0 μ s | 4.0 A |

If you need this device in the SOT package, an electrical equivalent is available. See FDSO1500 family.

ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | MIN | MAX | UNITS | TEST CONDITIONS |
|-----------------|-----------------------|------|------|---------|---|
| V _F | Forward Voltage | 0.83 | 1.0 | V | I _F = 200 mA |
| | | 0.79 | 0.92 | V | I _F = 100 mA |
| | | 0.75 | 0.88 | V | I _F = 50 mA |
| | | 0.65 | 0.80 | V | I _F = 10 mA |
| | | 0.60 | 0.75 | V | I _F = 5.0 mA |
| | | 0.52 | 0.68 | V | I _F = 1.0 mA |
| I _R | Reverse Current | | 1.0 | nA | V _R = 125 V |
| | | | 300 | nA | V _R = 30 V, T _A = 125°C |
| | | | 500 | nA | V _R = 125 V, T _A = 125°C |
| | | | 3.0 | μ A | V _R = 125 V, T _A = 150°C |
| I _{rr} | Reverse Recovery Time | | 3.0 | μ s | I _F = 10 mA, V _r = 3.5 V, R _L = 1.0 k Ω |
| C | Capacitance | | 8.0 | pF | V _R = 0, f = 1.0 MHz |
| BV | Breakdown Voltage | 150 | | V | I _R = 100 μ A |

NOTES:

1. The maximum ratings are limiting values above which life or satisfactory performance may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
3. 1N3595 and 1N6099 are electrically and mechanically identical.
4. For product family characteristic curves, refer to Chapter 4, D2.

FAIRCHILD

A Schlumberger Company

1N3600/FDLL3600 T-03-09
1N4150/FDLL4150
1N4450/FDLL4450
 High Conductance Ultra Fast Diodes

- $t_{rr} \dots 4.0$ ns (MAX)
- $V_F \dots 1.0$ V (MAX) @ 200 mA

ABSOLUTE MAXIMUM RATINGS (Note 1)

| | |
|------------------------------------|-----------------|
| Temperatures | |
| Storage Temperature Range | -65°C to +200°C |
| Max Junction Operating Temperature | +175°C |
| Lead Temperature | +260°C |

| | |
|---|------------|
| Power Dissipation (Note 2) | |
| Max Total Power Dissipation at 25°C Ambient | 500 mW |
| Linear Derating Factor (from 25°C) | 3.33 mW/°C |

| | | | | |
|--------------------------------------|--------------------------------|---------------|---------------|---------------|
| Maximum Voltages and Currents | | 1N3600 | 1N4150 | 1N4450 |
| WIV | Working Inverse Voltage | 50 V | 50 V | 30 V |
| I_O | Average Rectified Current | 200 mA | 200 mA | 200 mA |
| I_F | DC Forward Current | 400 mA | 400 mA | 400 mA |
| i_f | Recurrent Peak Forward Current | 600 mA | 600 mA | 600 mA |
| $i_f(\text{surge})$ | Peak Forward Surge Current | | | |
| | Pulse Width = 1.0 s | 1.0 A | 1.0 A | 1.0 A |
| | Pulse Width = 1.0 μ s | 4.0 A | 4.0 A | 4.0 A |

PACKAGES

| | |
|----------|-------|
| 1N3600 | DO-35 |
| 1N4150 | DO-35 |
| 1N4450 | DO-35 |
| FDLL3600 | LL-34 |
| FDLL4150 | LL-34 |
| FDLL4450 | LL-34 |

If you need this device in the SOT package, an electrical equivalent is available. See FDSO1200 family.



ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

| SYMBOL | CHARACTERISTIC | 1N3600 1N4150 | | 1N4450 | | UNITS | TEST CONDITIONS |
|----------|--------------------------------|--------------------------------------|-------------------------------------|------------------------------|-------------------------------------|--------------------------------|--|
| | | MIN | MAX | MIN | MAX | | |
| BV | Breakdown Voltage | 75 | | 40 | | V | $I_R = 5.0 \mu A$ $I_R = 5.0 \mu A$ |
| I_R | Reverse Current | | 100 | | 50 | nA nA μA μA | $V_R = 50$ V $V_R = 30$ V $V_R = 50$ V, $T_A = 150^\circ C$ $V_R = 30$ V, $T_A = 150^\circ C$ |
| V_F | Forward Voltage | 0.54 0.66 0.76 0.82 0.87 | 0.62 0.74 0.86 0.92 1.0 | 0.42 0.52 0.64 0.80 | 0.54 0.64 0.76 0.92 1.0 | V V V V V | $I_F = 0.1$ mA $I_F = 1.0$ mA $I_F = 10$ mA $I_F = 50$ mA $I_F = 100$ mA $I_F = 200$ mA |
| C | Capacitance | | 2.5 | | 4.0 | pF | $V_R = 0$, $f = 1.0$ MHz |
| t_{rr} | Reverse Recovery Time (Note 3) | | 4.0 6.0 | | 4.0 | ns ns ns | $I_f = I_r = 10$ mA to 200 mA, $R_L = 100 \Omega$ $I_f = I_r = 10$ mA, $R_L = 100 \Omega$ $I_f = I_r = 200$ mA to 400 mA, $R_L = 100 \Omega$ |
| t_{fr} | Forward Recovery Time | | 10 | | | ns | $I_f = 200$ mA, $t_r = 0.4$ ns, $V_{fr} = 1.0$ V |

- NOTES:**
1. Maximum ratings are limiting values above which life or satisfactory performance may be impaired.
 2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty-cycle operation.
 3. Recovery to 0.1 I_f .
 4. For family characteristic curves, refer to Chapter 4, D4.